<table>
<tr><td>Course code</td><td></td></tr>
<tr><td>Type and description</td><td>PD – elective course from a different discipline</td></tr>
<tr><td>ECTS credit</td><td>1</td></tr>
<tr><td>Course name</td><td>Applied Dynamics</td></tr>
<tr><td>Course name in Polish</td><td>Dynamika stosowana</td></tr>
<tr><td>Language of instruction</td><td>English</td></tr>
<tr><td>Course level</td><td>8 PRK</td></tr>
<tr><td>Course coordinator</td><td>Przemysław Perlikowski</td></tr>
<tr><td>Course instructors</td><td>Przemysław Perlikowski</td></tr>
<tr><td>Delivery methods and course duration</td><td>
<table>
<tr><th></th><th>Lecture</th><th>Tutorials</th><th>Laboratory</th><th>Project</th><th>Seminar</th><th>Other</th><th>Total of teaching hours during semester</th></tr>
<tr><td>Contact hours</td><td>15</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>15</td></tr>
<tr><td>E-learning</td><td>No</td><td>No</td><td>No</td><td>No</td><td>No</td><td>No</td><td></td></tr>
<tr><td>Assessment criteria (weightage)</td><td>100</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td></tr>
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<tr><td>Course objective</td><td>1. Acquisition of knowledge concerning dynamics of mechanical and electro-mechanical systems.

2. Acquisition of knowledge on interpreting the behaviour of dynamical systems.

3. Acquisition of knowledge on the influence of system’s parameters on its response.

4. Acquisition of knowledge of basic data acquisition of mechanical quantities.</td></tr>
<tr><td>Learning outcomes</td><td>After the course, a PhD student will be able to:

1. understand and apply notions, theorems and methods of the theory of dynamical systems: effects W1, W3, U3, K2

2. understand and interpret the behaviour of applied dynamical systems: effects W1, W3, U3

3. understand and apply stability measures to ensure stability and robustness of dynamical systems: effects W1, W3, U3</td></tr>
<tr><td>Assessment methods</td><td>Effects W1, W3 – oral examination

effects U3, K2 – presentation

The final evaluation is based on:

Exam - 50%

Presentation - 50%</td></tr>
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Prerequisites	The contents of the master degree course on the differential and integral calculus
Course content with delivery methods	Lecture: 1.) Introduction to mechanical systems 2.) Introduction to electro-mechanical systems 3.) Interpretation of linear system behaviour 4.) Nonlinearities in modelling of dynamical systems 5.) Stability measures in dynamical systems 6.) Influence of bifurcations on the stability and robustness of dynamical systems Presentation topics should focus on mathematical modelling of applied dynamical systems and the interpretation of numerical solutions.
Basic reference materials	1.) Balachandran, Balakumar, and Edward B. Magrab. Vibrations. Cambridge University Press, 2018. 2.) Den Hartog, Jacob Pieter. Mechanical vibrations. Courier Corporation, 1985. 3.) Seydel, Rüdiger. Practical bifurcation and stability analysis. Vol. 5. Springer Science & Business Media, 2009.
Other reference materials	
Average student workload outside classroom	35 h
Comments	
Last update	28.04.2023